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ABSTRACT

Education students' attitudes towards mainstreaming are crucial to the future success of the movement toward inclusive education. This study describes the attitudes toward mainstreaming held by undergraduate education students and assesses attitude changes related to knowledge about handicapping conditions and the field of education as well as classroom teaching experience. The Attitudes Toward Mainstreaming Scale (ATMS) was administered to 233 undergraduate education majors; 110 students participated in a follow-up study. In general, education students favor the idea of mainstreaming and are willing to teach in regular classes those students whose handicaps do not inhibit their own learning or the learning of others. Cross-sectional and longitudinal data indicated that advanced students held more positive attitudes toward mainstreaming than beginning students and there was a trend toward reporting more favorable attitudes toward mainstreaming during professional preparation prior to student teaching. Following student teaching, however, there was a significant decline in the favorability of students' attitudes toward mainstreaming. Use of the ATMS and implications of the findings of the survey for teacher training are discussed. (Author)

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USE OF THE "ATTITUDES TOWARD MAINSTREAMING SCALE" WITH UNDERGRADUATE EDUCATION STUDENTS

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Paper presented at the annual meeting of the New England Educational Research Organization, Portsmouth, NH, April, 1991.

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Abstract

Education students' attitudes towards mainstreaming are crucial to the future success of the movement toward inclusive education. This study describes the attitudes toward mainstreaming held by undergraduate education students and assesses attitude changes related to knowledge about handicapping conditions and the field of education as well as classroom teaching experience. The Attitudes Toward Mainstreaming Scale (ATMS) was administered to 233 undergraduate education majors; 110 students participated in a follow-up study. In general, education students favor the idea of mainstreaming and are willing to teach in regular classes those students whose handicaps do not inhibit their own learning or the learning of others. Cross-sectional and longitudinal data indicated that advanced students held more positive attitudes toward mainstreaming than beginning students and there was a trend toward reporting more favorable attitudes toward mainstreaming during professional preparation prior to student teaching. Following student teaching, however, there was a significant decline in the favorability of students' attitudes toward mainstreaming. Use of the ATMS and implications of the findings of the survey for teacher training are discussed.

USE OF THE "ATTITUDES TOWARD MAINSTREAMING SCALE" WITH UNDERGRADUATE EDUCATION STUDENTS

"Mainstreaming" refers to the process of integrating students with handicaps enrolled in special classes into regular classes to meet the requirement of least restrictive educational environment mandated by the Education for All Handicapped Children Act of 1975 (now referenced as PL 101-476: Individuals with Disabilities Education Act). Trends toward mainstreaming students with handicaps into regular classrooms have accelerated under the proposals of the Regular Education Initiative (Will, 1986). Considerable emotional and economic investments in the mainstreaming movement have been made with the hope of increasing acceptance of persons with handicaps in society-at-large. In order for mainstreaming to be effective, schools must be receptive to new special education service delivery models which emphasize integrated regular classroom settings.

A factor which might inhibit the educational, psychological, and social adjustment of children with handicaps in regular classes is the teacher's attitude toward mainstreaming. One commonly voiced concern about mainstreaming is that instructional time is strained when students with special needs are placed in regular classes. Jamieson's (1984) summary of research findings indicated that school personnel in closest contact with students, i.e. teachers, tend to hold more negative attitudes toward

mainstreaming than non-teaching staff (administrators, school psychologists).

An "attitude" typically denotes a psychological state that predisposes a person to action (Triandis, Adamopoulos, & Brinberg, 1984). There is general consensus that attitudes are learned and that teacher attitudes influence both teacher and student behavior. The success of the mainstreaming movement will depend to a large extent on the attitudes of prospective teachers toward mainstreaming and the professional preparation they receive for new teaching roles. Since education students' attitudes toward mainstreaming are critical to the future success of mainstreaming efforts, it is important to understand those attitudes and more importantly, to understand attitude changes.

To measure the attitudes of education students toward mainstreaming, the Attitudes Toward Mainstreaming Scale (ATMS), authored by Berryman, Neal, and Berryman (1983; 1989), was used. There is evidence of the reliability and factorial validity of the ATMS to justify the use of the scale to measure attitudes as a variable in studies of mainstreaming. ATMS validation studies have been carried out with education students, teachers, and nonprofessionals in Southeastern United States and in New Zealand (Berryman, 1989; Berryman, 1988; Berryman & Berryman, 1981; Berryman & Neal, 1980; Berryman, Neal, & Robinson, 1980; Green & Harvey, 1983). Berryman, Neal, and Berryman (1989)

identified 3 dimensions of attitudes toward mainstreaming via a factor analysis of item responses. The first factor was termed "Learning Capabilities," to refer to disabilities that would not necessarily inhibit a student's academic achievement in mainstream settings. Items grouped in the second factor, "General Mainstreaming" addressed the feasibility of teaching children with handicaps in regular classrooms. "Traditional Limiting Disabilities," the third factor, dealt with mainstreaming children with various sensory impairments. No disability-specific factors were reported.

The purposes of the present study were to describe the attitudes toward mainstreaming held by undergraduate education students and to assess attitude changes related to knowledge about handicapping conditions and the field of education generally as well as teaching experience in the classroom. The construct validity and reliability of the ATMS used with undergraduate students majoring in education was evaluated. Other objectives of the study were to determine whether there were differences in attitudes toward mainstreaming among education students grouped according to sex, age, class, and teaching field. A baseline of education students' attitudes toward mainstreaming was established and attitude changes were monitored as students progressed through different phases of their undergraduate professional preparation.

Method

Subjects

Undergraduate education students at a small college in Northeastern United States were surveyed concerning their attitudes toward mainstreaming. Out of a population of 250 education majors, 233 students were surveyed, and 229 students returned usable scales. Personal information concerning sex, age, class, and teaching field of the survey respondents was collected. Ninety percent of the sample were female; 56% were of traditional college age, i.e., 25 years of age or younger; 21% indicated an intention to obtain special education certification; approximately half of the sample were beginning level education students (freshpersons and sophomores) and half were advanced education students (juniors and seniors). All subjects indicated a familiarity with the educational use of the term "mainstreaming." Sixty-seven percent of the subjects in the original sample volunteered to participate in a follow-up study.

Procedures

Students enrolled in undergraduate education courses were asked to complete the revised Attitudes Toward Mainstreaming Scale (Berryman, Neal, & Berryman, 1989), which was developed to measure attitudes toward the integration of students with disabilities into regular classrooms. The Attitudes Toward Mainstreaming Scale (ATMS) consists of 18, six-point Likert-type attitudinal statements

with strongly agree/strongly disagree anchors concerning mainstreaming both students with special needs in general and those with specific disabilities in particular. Low scores on the ATMS indicate more favorable attitudes toward mainstreaming.

Initial surveys were conducted during 1989-90 academic year with follow-up surveys administered at semester intervals through the Spring of 1991. One semester after completing the first survey, those students who volunteered for follow-up were contacted to complete a second survey. Follow-up participants were in one of three groups: 1. beginning level education students who had just completed the first course in the professional preparation sequence addressing issues in educating students with special needs (Psychology of the Exceptional Child); 2. advanced level students who were continuing their general professional preparation coursework in education; and 3. advanced students who just completed student teaching.

Results

To evaluate the construct validity of the Attitudes Toward Mainstreaming Scale used with undergraduate students in education, responses were analyzed using principal components factor analysis and orthogonal varimax solutions. Scale items were distributed among 3 factors for the present population. Two of the factors roughly incorporated the 3 dimensions described by Berryman and colleagues (1989): 1. Learning Capabilities, with the

exception of item 7 (hearing impairments); and 2. General Mainstreaming and Traditional Limiting Disabilities. In this study, a third, disability-specific factor involved mainstreaming students with behavioral handicaps. Table 1 presents the factor loadings of the 18 ATMS items, reliabilities, and summary statistics. Factor loadings ranged from .60 to .81. Items were assigned to factors on the basis of highest factor loadings. Internal consistency reliability (Cronbach's alpha) was .93 for the total scale; coefficients for the factors ranged from .84 to .91. Pearson product moment correlations between individual factors and total scale scores ranged from .65 to .91 with factor intercorrelations ranging from .47 to .69.

Insert Table 1 about here

A mean total ATMS score of 43.59 with a Standard Deviation 12.90, indicating moderate approval of mainstreaming, for all respondents was obtained. Scale items, and the means and standard deviations for the three factors and for each item, are included in Table 2.

Insert Table 2 about here

Information concerning sex, age, class, and field of study in education was obtained from the survey respondents. ANOVAs were calculated to determine whether significant differences occurred among the various categories of subjects in ATMS total score and in each of the three factor scores. Each factor on the ATMS showed high internal consistency to support its use for intergroup

comparisons. A significance level of .01 was used per Bonferroni adjustment for multiple tests.

ATMS total and factor scores for males (n=22) and females (n=207) were not significantly different. There were no significant ATMS score differences between students intending to obtain special education teaching certification (n=48) versus those students not pursuing a course of study in special education (n=181).

Two age groups were defined consisting of 129 students of traditional college age (25 years or younger) and 100 nontraditional age undergraduates (over 25 years). A significant difference in attitudes toward mainstreaming was found between the traditional and nontraditional age students on the third ATMS factor: older undergraduates were less favorable to mainstreaming students with behavior problems than were younger undergraduates. See Table 3.

Insert Table 3 about here

Students were grouped according to class: 111 beginning level education majors (freshpersons and sophomores) and 118 advanced level education majors (juniors and seniors). Significant differences were found for the two groups on total scale scores and Factors I and II; advanced level education students recorded more favorable attitudes toward mainstreaming than beginning level students. Table 4 contains those results.

Insert Table 4 about here

Of the 157 students who volunteered to participate in a follow-up study, 110 returned surveys. Thirty-five beginning level education majors showed a nonsignificant trend reporting more favorable attitudes toward mainstreaming after completing an introductory course in the Psychology of the Exceptional Child. Similarly, 29 advanced level education majors showed a nonsignificant trend in increasingly positive responses on the ATMS after completing a semester of general professional preparation coursework in education. Follow-up data for the 64 students are in Table 5.

Insert Table 5 about here

Conversely, 46 advanced students who took the follow-up survey after one semester of student teaching showed a statistically significant decrease in favorability ratings regarding mainstreaming on the ATMS for total score as well as factors II and III (see Table 6).

Insert Table 6 about here

Discussion

The present study was designed to assess attitudes and to monitor changes in attitudes toward mainstreaming among education students during their undergraduate professional preparation.

Construct validation of the Attitudes Toward Mainstreaming Scale used with undergraduate education students was carried out. Factor analytic procedures yielded 3 factors with a different structure than that

reported in the ATMS manual; exceptions concerned mainstreaming deaf, blind, hearing impaired, and behaviorally disordered students. In this study, Factor I identified handicapping conditions that did not necessarily interfere with learning capacity, i.e. physical disabilities. Factor II did not have a distinct content; rather there was a merger of items dealing with what the authors of the ATMS termed "general mainstreaming" issues (e.g., the feasibility of mainstreaming students with handicaps) and "traditional limiting disabilities" (e.g., sensory impairments). Factor III was disability-specific, referring to mainstreaming students with behavioral problems. Factor intercorrelations indicated moderate dependence, but were low enough to suggest that education students' attitudes toward mainstreaming were multidimensional.

The overall mean obtained on the ATMS (43.59) indicated moderate approval of the practice of mainstreaming within this sample. Education students generally favored the idea of mainstreaming and were willing to teach in regular classes those students whose handicaps did not inhibit their own or others' ability to learn. Those findings are compatible with other studies (Jamieson, 1984; Leyser, 1989) which have shown a higher acceptance of persons with physical disabilities or sensory impairments in the mainstream than persons with learning problems or social/emotional disorders. There were no significant

differences in attitudes toward mainstreaming between males and females or for special education versus regular education majors, however, the small sample sizes for males and special education majors respectively, make it difficult to draw firm conclusions about those groups. For practicing teachers, normative data collected by Berryman and Berryman (1981), indicated that the respondents' sex and field of certification had no effect on their attitudes toward mainstreaming.

Cross-sectional and longitudinal data indicated that undergraduate education students' attitudes toward mainstreaming were most positive during professional preparation just prior to student teaching; more favorable attitudes were expressed by advanced than beginning students at the time of the original survey, and a trend toward reporting more positive attitudes toward mainstreaming was noted at follow-up for both beginning and advanced level education students. In contrast, students who completed a follow-up ATMS after student teaching, the last stage in professional preparation before obtaining a degree and teaching certification, indicated a marked decrease in the favorability of their attitudes toward the practice of mainstreaming.

Berryman and Berryman (1981) noted that older survey respondents as well as those with more teaching experience held less favorable attitudes toward mainstreaming as defined by the ATMS than did younger teachers with less

experience. Other studies have shown that actual experience with mainstreaming leads to more negative attitudes (see Jamieson, 1984). Negative trends in attitudes toward mainstreaming among teachers apparently start with student teaching. One reason for the decline in favorability ratings is that education students' attitudes toward mainstreaming might be unrealistically optimistic before acquiring classroom teaching experience. Among the education students in this sample, classroom experience through student teaching had a significant negative impact on their attitudes toward mainstreaming children with handicaps in regular classes. Labels for the various handicapping conditions listed on the ATMS are not informative about instructional needs, and prior to student teaching, survey respondents were unable to evaluate the impact of the instructional demands of mainstreaming children with handicaps. But the categorical labels on the ATMS became instructionally meaningful once students were in charge of classrooms. Student teachers were concerned about the feasibility of meeting the individual needs of students with handicaps as well as those without handicaps in mainstream settings. It is unclear whether the expression of negative attitudes following student teaching was due to lack of materials, resources, or support. Student teaching may be a crucial time when students are probably most self-conscious about their teaching. There is a need to increase student teachers' confidence and competence in teaching

mainstreamed students so children with special needs are not met with initial rejection.

This study examined the attitudes toward mainstreaming of students enrolled at a small college. Informal interviews with students after their student teaching experience revealed several areas of concern about mainstreaming with implications for teacher training: 1. behavior management; 2. planning for different instructional levels to meet individual learning needs; 3. planning for effective use of classroom aides; 4. strategies to encourage social engagement of students with and without handicaps; 4. safety concerns about lifting or moving students with physical disabilities (e.g., fire drills); 6. using consultants effectively; 7. frustration in working with students who do not progress as quickly as expected.

Technical aspects of the ATMS need to be addressed. One issue is the balance of the scale in representing various handicapping conditions as educationally significant in mainstreaming. The first factor, "Learning Capability," lists nine specific physical, sensory, or health handicaps which are comparatively low incidence handicaps; four items deal with sensory impairments, three with motor disabilities, and two refer to health problems. Two items refer to speech but not language disorders, two items to behavior disorders, and one item to mild mental retardation. No items refer to learning disabilities, the single largest special education category. As well,

language impairments have been overlooked. With the movement toward inclusive education, attitudes toward mainstreaming individuals with severe and multiple handicaps will need to be assessed. Increasing the number of items on the ATMS assessing attitudes for broader ranges and various degrees of handicap would enhance the utility of the scale.

If the regular education initiative is to succeed it will need the support of teachers in training. Negative attitudes acquired early in one's career might be difficult to change as subsequent experiences will be filtered through a bias against mainstreaming. There is a need for research on the effectiveness of different approaches to preparing education students to teach in mainstream settings.

References

Berryman, J.D. (1989). Attitudes of the public toward educational mainstreaming. Remedial and Special Education, 10, 44- 49.

Berryman, J.D. (1988). Attitudes Toward Mainstreaming Scale: Factorial validity for a lay population. Educational and Psychological Measurement, 48, 231-236.

Berryman, J.D. & Berryman, C. (1981). Use of the Attitudes Toward Mainstreaming Scale with rural Georgia teachers. Paper presented at the Annual Meeting of the American Educational Research Association, Los Angeles, CA. (ERIC Document Reproduction Service No. ED 201-420).

Berryman, J.D. & Neal, W.R., Jr. (1980). The cross validation of the Attitudes Toward Mainstreaming Scale (ATMS). Educational and Psychological Measurement, 40, 469-474.

Berryman, J.D., Neal, W.R., Jr., & Berryman, C. (1989). Attitudes Toward Mainstreaming Scale - Revised. Athens, GA: University of Georgia.

Berryman, J.D., Neal, W.R., Jr., & Robinson, J.E. (1980). The validation of a scale to measure attitudes toward the classroom integration of disabled students. Journal of Educational Research, 73, 199-203.

Green, K. & Harvey, D. (1983). Cross-cultural validation of the Attitudes Toward Mainstreaming Scale. Educational and Psychological Measurement, 43, 1255-1261.

Jamieson, J.D. (1984). Attitudes of educators toward the handicapped. In R.L. Jones (Ed.). Attitudes and attitude change in special education: Theory and practice (pp. 206-222). Reston, VA: Council for Exceptional Children.

Leyser, Y. (1989). A survey of faculty attitudes and accommodations for students with disabilities. Journal of Postsecondary Education and Disability, 7, 97-108.

Triandis, H.C., Adamopoulos, J., & Brinberg, D. (1984). Perspectives and issues in the study of attitudes. In R.L. Jones (Ed.). Attitudes and attitude change in special education: Theory and practice (pp.21-40). Reston, VA: Council for Exceptional Children.

Will, M.C. (1986). Educating children with learning problems: A shared responsibility. Exceptional Children, 52, 411-415.

Table 1

VARIMAX Rotated Factor Matrix Showing Factor Loadings, Reliabilities, and Summary Statistics for the Attitudes Toward Mainstreaming Scale Used With Undergraduate Education Students

Item Topics	Factor Loadings			Total Scale
	I	II	III	
Seizure disorder (14)	.77	.14	.14	
Stutterers (12)	.77	.21	.14	
Ambulatory physically handicapped (10)	.75	.22	.21	
Nonambulatory physically handicapped (9)	.72	.15	.24	
Diabetic (15)	.72	.01	.24	
Visually impaired (5)	.71	.39	-.17	
Cerebral palsy (11)	.67	.30	.27	
Speech disorders (13)	.67	.37	.22	
Hearing impaired (7)	.65	.50	-.11	
Mainstreaming is a "right" (2)	.14	.72	.31	
Mainstreaming is "feasible" (3)	.13	.71	.20	
Mainstreaming is "desirable" (1)	.17	.70	.26	
Educable mental retardation (4)	.27	.66	.16	
Mainstreaming should be "retained" (18)	.17	.63	.32	
Blind (6)	.54	.62	-.13	
Deaf (8)	.49	.60	-.13	
Discipline problems (17)	.18	.28	.81	
Behavior disorders (16)	.29	.32	.76	
Eigenvalues	8.28	1.82	1.28	
Percent of variance	46.00	10.10	7.10	63.2
Alpha coefficients	.91	.85	.84	.93
Mean score	2.00	2.71	3.27	2.50
Standard deviation	.74	.86	1.06	.72
Total scale and factor intercorrelations				
I	-	.69	.47	.91
II		-	.51	.91
III			-	.65
Total				-

NOTE: Numbers following each topic indicate the order in the scale.

Table 2

Factors, Means, and Standard Deviations for Items on the Attitudes Toward Mainstreaming Scale Used With Undergraduate Education Students

ATMS Total Score
Mean = 43.6 Standard Deviation = 12.9

Factor 1: Learning Capability
Mean = 18.02 Standard Deviation = 6.62

M=1.49 SD= .64 Students with diabetes should be in regular classrooms.

M=1.75 SD= .86 Students who stutter should be in regular classrooms.

M=1.83 SD= .82 Physically handicapped students not confined to wheelchairs should be in regular classrooms.

M=1.88 SD= .98 Students with epilepsy should be in regular classrooms.

M=1.91 SD=1.00 Physically handicapped students confined to wheelchairs should be in regular classrooms.

M=1.93 SD= .85 Visually handicapped students who can read standard printed material should be in regular classrooms.

M=2.14 SD=1.04 Hearing impaired students, who are not deaf, should be in regular classrooms.

M=2.25 SD=1.11 Students with speech difficult to understand should be in regular classrooms.

M=2.83 SD=1.27 Students with cerebral palsy who cannot control movement of one or more of their limbs should be in regular classrooms.

Factor 2: General Mainstreaming + Limiting Disabilities
Mean = 19.02 Standard Deviation = 6.05

M=2.07 SD= .96 Students should have the right to be in regular classrooms.

M=2.27 SD=1.14 In general, mainstreaming is a desirable educational practice.

M=2.53 SD=1.14 Mainstreaming will be sufficiently successful to be retained as a required educational practice.

M=2.56 SD=1.04 Educable mentally retarded students should be in regular classrooms.

M=3.15 SD=1.37 Blind students who cannot read standard printed material should be in regular classrooms.

M=3.22 SD=1.39 Deaf students should be in regular classrooms.

M=3.23 SD=1.21 It is feasible to teach gifted, normal, and mentally retarded students in the same class.

Factor 3: Specific Disabilities
Mean = 6.55 Standard Deviation = 2.12

M=3.26 SD=1.18 Students who present persistent discipline problems should be in regular classrooms.

M=3.28 SD=1.10 Students with behavior disorders who cannot readily control their own behavior should be in regular classrooms.

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Table 3

ATMS Scores and Differences By Age

Total Scale Scores

Younger	M = 43.87	SD = 12.94
Older	M = 42.84	SD = 12.95

Factor I Scores

Younger	M = 18.63	SD = 6.74
Older	M = 17.01	SD = 6.23

Factor II Scores

Younger	M = 19.12	SD = 6.04
Older	M = 18.71	SD = 6.13

Factor III Scores

Younger	M = 6.06	SD = 1.93
Older	M = 7.09	SD = 2.24

Differences

	DF	F	Prob.
Total	1/227	.35	ns
Factor I	1/227	3.48	ns
Factor II	1/227	.26	ns
Factor III	1/227	13.81	.001

Table 4

ATMS Scores and Differences By Class

Total Scale Scores

*Beginner	M = 45.67	SD = 12.54
*Advanced	M = 41.32	SD = 13.03

Factor I Scores

Beginner	M = 19.27	SD = 6.32
Advanced	M = 16.70	SD = 6.58

Factor II Scores

Beginner	M = 19.94	SD = 6.06
Advanced	M = 17.97	SD = 5.95

Factor III Scores

Beginner	M = 6.39	SD = 2.19
Advanced	M = 6.63	SD = 2.08

Differences

	DF	F	Prob.
Total	1/227	6.48	.01
Factor I	1/227	8.98	.00
Factor II	1/227	6.01	.01
Factor III	1/227	.73	ns

*Beginner (Freshpersons and Sophomores)
*Advanced (Juniors and Seniors)

Table 5

ATMS Score Differences Prior to Student Teaching (n=64)

Total Scale Scores

Original	M = 44.3	SD = 14.0
Follow-up	M = 41.3	SD = 13.0

Factor I Scores

Original	M = 18.6	SD = 7.2
Follow-up	M = 16.8	SD = 5.6

Factor II Scores

Original	M = 19.3	SD = 6.2
Follow-up	M = 18.9	SD = 5.8

Factor III Scores

Original	M = 6.5	SD = 2.2
Follow-up	M = 6.5	SD = 1.9

Differences

	t*	Prob.
Total	1.29	.20
Factor I	1.98	.05
Factor II	.53	.60
Factor III	-.23	.82

*Paired-Means t-Test

Table 6

ATMS Scores Differences Before and After Student Teaching (n=46)

Total Scale Scores

Before	M = 41.7	SD = 10.8
After	M = 51.7	SD = 11.6

Factor I Scores

Before	M = 17.1	SD = 5.9
After	M = 18.5	SD = 5.5

Factor II Scores

Before	M = 17.8	SD = 5.1
After	M = 23.9	SD = 6.6

Factor III Scores

Before	M = 6.7	SD = 1.9
After	M = 9.4	SD = 1.8

Differences

	t*	Prob.
Total	-7.55	.00**
Factor I	-1.63	.11
Factor II	-8.24	.00**
Factor III	-8.92	.00**

*Paired-Means t-Test
**p<.001